

Technology and Social Studies Instruction for Students with Mild Disabilities

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### Technology and Social Studies Instruction for Students with Mild Disabilities

In some ways, this was an easy chapter to write, for research about using technology in social studies instruction for students with mild disabilities is extremely slim. This is not surprising. Compared to literacy, mathematics, and science, social studies has been a low-priority subject in today's schools. For example, the recent No Child Left Behind Act does not mandate regular assessment in social studies, as it does in other subject areas. The national debate about the content of social studies, which reached a peak in the mid 1990s, was rancorous (e.g. Nash, Crabtree, & Dunn, 1997; Gitlin, 1995; Wineburg, 2001). Disagreements still reverberate about what to teach, and the relative emphasis to be placed on process versus content (e.g., Blanco & Rosa, 1997; Brophy & Alleman, 2002; Wineburg, 2001).

Furthermore, students with disabilities traditionally have been exempted from social studies instruction (Curtis, 1991; Patton, Polloway, & Cronin, 1987). And, when they are included, evidence suggests that teachers rarely make the adaptations or accommodations that are needed for successful inclusion (Passe & Beattie, 1994; Schumaker et al., 2002). In our own research in urban, inclusive, middle-grade classrooms (e.g., MacArthur, Ferretti, & Okolo, 2001; Okolo, Ferretti, & MacArthur, 2002;), we have found that social studies and science tend to compete for the same time slot in the school schedule, often at the end of the school day. Finally, social studies is the subject that is most likely to be sacrificed for other school events such as assemblies and program such as drug education or foreign language lessons.

This neglect of social studies instruction for students with disabilities is unfortunate. The social studies offer rich opportunities for students not only to learn important content, but also to develop problem-solving and literacy skills (e.g., Ferretti & Okolo, 1996). Social studies is

multifaceted domain that encompasses the disciplines of history, economics, geography, and civics, and also draws from sociology, anthropology, political science, and psychology. The social studies requires students to read and interpret a variety of information from narrative and informational texts. Students also work with maps, graphs, images, and, increasingly, information that is available on the Web. Because history, in particular, requires investigation and interpretation (e.g., VanSledright, 2002), students have multiple occasions to practice and apply literacy and communication skills through reading, writing, presentation, and debate. Furthermore, because social studies problems are typically ill structured, students must reason and draw conclusions about the types of problems that they are most likely to encounter in everyday life (Ferretti & Okolo, 1996).

#### Social Studies and Students with Mild Disabilities

One factor that accounts for the low priority assigned to social studies instruction for students with disabilities may be the manner in which it is most often taught. Traditionally, elementary and secondary school social studies instruction has focused on memorization of places, people, events, and dates (Stearns, Seixas, & Wineburg, 2000), and is rooted in the textbook, the limitations of which have been well documented (e.g., Bean, 1994; Beck & McKeown, 1991; Brophy, 1990; Paxton, 1999).

Briefly, social studies textbooks are often ill structured and inconsiderate (Armbruster & Anderson, 1984) of the cognitive, metacognitive, and motivational needs of school-age readers (Allington, 2002; Cibrowski, 2003). Crammed with factual information that can overwhelm students and depress their interest in history and other social studies topics, textbooks are rarely organized in ways that help students see the big ideas or the connections among different periods of time and events, and especially, ways that might enrich their understanding of the contexts in

which people lived, their multiple viewpoints, and the relationship between the social and historical contexts of yesterday and today. Further, information is often presented in an authoritative, one-sided manner that misrepresents the rich interpretative process and frequent contentions that are at the heart of historical inquiry (Wineburg, 2001).

Equally problematic, textbooks make assumptions about the reading abilities and background knowledge of their readers that are particularly unwarranted for students with reading and learning problems. Such readers require explicit instruction in reading skills and strategies that might help them identify the big ideas, as well as tools for gathering and recording evidence from multiple sources, analyzing multiple points of view, and constructing and communicating their interpretations. This is particularly unfortunate as extant data show that general educators-the teachers most likely to teach social studies to students with disabilities in inclusive classrooms-are uncertain about how to make accommodations in texts and instruction to meet the needs of these learners (e.g., Passe & Beattie, 1994; Schumaker et al., 2002).

History is a core subject in the K-12 social studies curriculum, and researchers have found that historical understanding demands a great deal of cognitive and literary sophistication, and the cognitive tools, experiential backgrounds, and literacy skills available to middle-grade learners pose challenges to its development (Okolo, Ferretti, & MacArthur, 2002). Students' concepts of time and distance and knowledge of geography develop with age and experience (e.g., Barton & Levstik, 1996; Brophy, 1990; Lee & Ashby, 2000; Wineburg, 1991). Historical empathy (Wineburg, 2000), or taking the perspective of others who lived in different circumstances and times, is constrained by students' level of cognitive development and by the knowledge they can bring to bear upon the lives of others. In order to draw conclusions about history, students must absorb and critique evidence from a wide range of conflicting sources and

coordinate often conflicting points of view (Lowenthal, 2000). They must be sensitive to and able to detect bias in evidence, and be prepared to take bias into account when constructing complete and representative conclusions (Ferretti, MacArthur, & Okolo 2001). Although often in narrative form, historical evidence is also comprised of expository text and may be written in unfamiliar language because of its age. Given these demands, it is no wonder that even cognitively mature adults are challenged by history, and perhaps not so surprising, that literacy, mathematics, and science instruction have been more successful in capturing the interest of special educators.

### Technology and Social Studies Instruction

Technology offers several advantages for improving the teaching of social studies, for helping students understand complex concepts, and for enabling them to develop the problem-solving and decision-making skills that can promote their participation as informed citizens of a democratic society. Furthermore, technology can add a much-needed motivational boost to a subject that rarely ranks at the top of students' list of favorites (Rosenzweig & Thelen, 1998). This chapter will address the following uses of technology in social studies instruction: (a) data analysis, presentation, and communication tools; (b) supported text; (c) information archives; (d) online projects; and (e) simulations and virtual worlds. Where possible, research on the use of these technology-based applications with students who have mild disabilities will be discussed, including the potential benefits and challenges of these applications of technology. The focus of this chapter will be on students with mild disabilities, including those with learning disabilities, mild cognitive disabilities, and emotional/behavioral disabilities.

As mentioned above, the research base on technology, social studies, and students with mild disabilities is very thin. Although studies indicate that social studies teachers do not make

widespread use of technology in instruction (Ehman & Glenn, 1991; Schumaker et al., 2002), a growing body of research and anecdotal evidence suggests how technology may improve outcomes for students who are not disabled. Yet, it is difficult to locate even descriptive articles about how teachers have used technology to meet social studies goals for students who have mild disabilities. Therefore, much of the discussion to follow draws upon research with students who do not have disabilities. Also, where applicable, conclusions about the potential impact and challenges are extrapolated from studies of technology use in literacy and other content areas.

#### *Data Analysis, Communication, and Presentation Tools*

A variety of technology-based tools are available to support students' analysis, interpretation, organization, and communication of social studies topics and content. *General-purpose tools*, available as software packages and on the Web, are as important in the social studies as they are in other content areas. Thus, word processing and other writing software facilitates the construction of written documents, including essays, diaries, and letters to the editor. Similarly, the graphics capabilities of word-processing programs facilitate the construction of documents such as travel brochures to advertise a distant country that students have studied or newspapers that offer an alternative version of a historical event such as the 1957 desegregation of Little Rock Central High School.

Databases and spreadsheets are other general-purpose tools that facilitate social studies instruction. Norton and Harvey (1995) discussed the use of a database to help students explore mortality and its causes among a group of settlers who participated in the mid-1800s westward expansion of the United States. Paul and Kaiser (1996) described a unit in which students used a spreadsheet of data from a South African graveyard to analyze gender differences in lifespan. Spreadsheets and databases extend students' data-analytic capabilities through functions such as

sorting, searching, computing, and reporting data. Furthermore, the charting and graphing features that accompany many general-purpose software programs help students to display their findings in a variety of representations.

Rather than taking an end-of-the-chapter test, students can engage in more disciplinary-consistent activities to demonstrate their social studies knowledge. For example, authoring and presentation tools support the process of documenting and communicating to broad audiences what students have learned. Thus, the multimedia capabilities of these tools enable students to integrate pictures, sounds, movies, and music with text. Research has shown that the construction of multimedia projects offers unique benefits, including increased knowledge of a topic that is maintained over time and enhanced interest, motivation, and engagement (Lehrer, Erickson, & Connell, 1998). In our research program, we have used a variety of authoring programs with middle-grade learners in inclusive classrooms, ranging from Digital Chisel (Pierian Spring Software) to HyperStudio (Roger Wagner) to PowerPoint (Microsoft). Our participants have been excited by the opportunity to express themselves through multimedia and students with disabilities often find more avenues for success in the group when their contributions are not limited to print. Furthermore, students are proud of their professional-looking finished products (Ferretti & Okolo, 1996).

Several *special-purpose technology tools* are designed to accomplish more specific functions or to support activities that are more germane to social studies instruction. For example, research by Lynne Anderson-Inman and colleagues has shown that the concept mapping and outlining tools in Inspiration (Inspiration Software) can assist students with disabilities in actively constructing an understanding of a domain and creating more effective notes and syntheses of information (Anderson-Inman, 1994; Anderson-Inman & Zeitz, 1994). In social studies

instruction, individuals and groups of students can use concept maps as a tool for organizing the information they are collecting and analyzing during their inquiries, and as tools for organizing reports and presentations.

Like other students, students with disabilities often have background knowledge that they could bring to bear upon an event or issue about which they are reading or learning in history and other subjects. Tapping into that background knowledge enhances their understanding. However, without support students with disabilities may fail to do so spontaneously (Bos & Vaughn, 2002; Wong, 1980). Techniques such as brainstorming and discussing what one knows, wants to know, and has learned (or K-W-L, Ogle, 1986) have been used to help students access their background knowledge about topics in history and social studies (Okolo, Ferretti, & MacArthur, 2002). Concept-mapping program such as Inspiration also facilitate the capture and display of ideas and questions generated in brainstorming sessions such as these. Equipped with a computer and a projection device, a teacher can construct a concept map of key points on the fly. Students' ideas or questions can be represented as independent nodes in initial brainstorming sessions, and then linked to one another in substantive and hierarchical ways in later discussions or lessons. Concept maps can be viewed as outlines and outlines as concept maps. Maps created in this manner can be printed for individual or class use and pasted into class and individual projects, including Web sites and presentations.

Kidspiration (a child-friendly version of Inspiration) is appropriate for a range of learners with mild disabilities, especially because it offers text-to-speech capabilities to assist with reading and editing text. Both programs can be downloaded for a 30-day free trial from the Inspiration website ([www.inspiration.com](http://www.inspiration.com)).



Chronological sequencing is a standard of most state and district curricula. Timeliner (Tom Snyder Productions) constructs electronic timelines that students can easily create, modify, and graphically display a timeline of events or topics. We have found time lining particularly useful when introducing a new topic in history classes. Students are often uncertain about the chronology of events leading up to the ones they will study, and how are these events related? We have used Timeliner to construct timelines of key historical events around which teachers can structure classroom discussion. Students' personal copies can be used throughout the unit's activities and a class timeline can be revised and extended as new events are examined. The Tom Snyder website ([www.teachtsp.com](http://www.teachtsp.com)), which offers a downloadable trial version of the software, has a rich collection of ideas for implementing Timeliner in social studies and other content areas.

The above discussion has covered a broad range of tools with implications for improving social studies instruction as students engage in tasks that include the analysis, interpretation, organization, communication, and presentation of information. The degree to which these tools will be beneficial depends, to a great degree, on the skill of the teacher in structuring and guiding their use. Students will need instruction in using the vocabulary and functions that accompany the use of these tools (e.g., cell, formula; record, field, search). Teachers also must consider how to teach students to use these tools in mindful ways (Perkins & Salomon, 1989). For example, studies have shown that mere use of multimedia authoring tools or presentation software does not guarantee that students will learn more or differently than students who do not have access to similar tools (e.g., Okolo & Ferretti, 1997; Saye & Brush, 2002).

More sophisticated and specific-purpose tools may be difficult to integrate into the curriculum. For example, Hawkins and Sheingold (1986) reported that social studies teachers

found databases difficult to integrate into topic-oriented curricula. Okolo et al. (2002) found that, although middle-school learners with mild disabilities could learn to use and were motivated by non-linear authoring tools for developing presentations of the results of their historical inquiries, it was very difficult to find sufficient time to integrate them into the social studies classroom on a regular basis.

### *Supported Text*

*Supported text* is one of the labels used to describe text that is displayed via a computer and augmented with resources to facilitate a reader's comprehension, engagement, and motivation. Electronic enhancements may include hearing text read aloud, accessing definitions of unfamiliar words, obtaining background information about confusing or unfamiliar concepts, or acquiring alternative representations of information (e.g., viewing text in English, Spanish or American Sign Language; viewing a written description or a film clip). Speech is one of the most obvious and easily implemented augmentations to print-based text. Many common word-processing programs will read text aloud. Screen reading programs, such as E-Reader (CAST) and Jaws (Henter-Joyce), will read information from the World Wide Web (WWW). Further, the Kurzweil 3000 (Kurzweil Educational Systems) enables educators to create electronic versions of scanned text that can be read and augmented with decoding, study skills, and test-taking tools. In summary, technology affords opportunities to enhance social studies textbooks in ways that make them more accessible to learners with disabilities.

Many researchers have investigated the use of supported text with learners who have reading and other learning disabilities (e.g., Okolo, Cavalier, Ferretti, & MacArthur, 2000), but not much of this work has been conducted in the context of social studies classes. Higgins and colleagues (Higgins & Boone, 1990; Higgins, Boone, & Lovitt, 1996) developed electronic study

guides that consisted of segments of a history textbook augmented by explanatory passages, synonyms or paraphrases of difficult words or phrases, and multiple-choice questions that required a correct response before students could advance in the text. Results suggested that students with learning disabilities and low achievers learned at least as much from the study guides as they did from teacher lectures. MacArthur and Haynes (1995) developed enhanced versions of a science textbook for high school students with learning disabilities and found that students who used the enhanced textbooks scored significantly higher on tests of chapter content than students who read the same text, without enhancements, on the computer.

Lynne Anderson-Inman and her colleagues (Anderson-Inman & Horney, 1993, 1998; Anderson-Inman, Horney, Chen, & Lewin, 1994; Horney & Anderson-Inman, 1994) have examined the use of supported text in language arts classes for students with learning disabilities and hearing impairments. Their studies have documented different patterns of supported text use, ranging from superficial to integrative. Students who systematically integrated text with other electronic resources experienced higher comprehension than readers who skimmed and scanned information or who clicked on information of interest in a more haphazard fashion.

Research about text that is “read aloud” by computer-based software and screen-reading programs suggests that viewing text and hearing it read aloud enhances the comprehension of some learners with disabilities (e.g., Elkind, Cohen, & Murray, 1993; Montali & Lewandowski, 1996). However, Elkind and his colleagues (Elkind, 1998a, 1998b; Elkind, Black, & Murray, 1996) found that technology applications that read text to students support comprehension only under certain conditions, such as when the reader has a poor reading rate, has a strong oral vocabulary, and can quickly integrate auditory and visual information.

Edyburn (2002; 2003a; 2003b) describes a systematic approach for making text more accessible to readers that makes use of a variety of technology-based applications including text-to-speech software, concept mapping, and electronic quizzes. He also discusses principles of cognitive rescaling, or ways to manipulate text that increase or decrease its cognitive demands. These principles offer comprehensive guidance to special and general educators in their attempts to make text more accessible to a variety of learners.

In conclusion, supported text is one option for making written social studies materials, particularly textbooks, more accessible to students with mild disabilities. Merely having text read to students by a screen reader or software program is unlikely to resolve the problems associated with understanding and learning from social studies texts, however. Furthermore, textbook-based curricula limit students' opportunities to engage in social studies in ways that are consistent with the social studies disciplines and with current social studies standards—that is, as active inquirers who investigate, analyze, and interpret multiple sources and perspectives; draw and defend reasonable conclusions; and communicate the results of their investigations. The real power of supported text for learners with disabilities and, indeed, for all learners, lies in the ability to link any text with a multiplicity of alternative presentations and perspectives on a topic, and to provide the type of scaffolding that supports learners' needs and characteristics. As discussed next, information archives, online projects, and virtual environments incorporate many of the features of supported text.

### *Information Archives*

Technology, through the resources on the World Wide Web, offers a voluminous *information archive* of sources and materials that can inform and contribute to students' active engagement in and understanding of social studies. Lee (2002) estimated that tens of millions of historical

documents have been placed on the Web. For example, many major historical museums, state and national parks, and universities offer Web sites that contain rich primary- and secondary-source documents about historical characters and events. The Library of Congress has a rich archive of historical materials, and commercial ventures such as PBS and History Channel also offer instructionally relevant materials in support of their televised programs and videos. Many of these sites contain lessons plans that assist teachers in using source materials to develop students' historical understanding. In fact, the burgeoning use of the Web in history instruction has spawned the new specialization of *digital history*, or the study of the past using electronically reproduced primary-source texts, images, and artifacts and historical narratives, accounts, or presentations that result from digital historical inquiry (Lee, 2002).

In addition to history-oriented Web sites, a voluminous number of sites contains maps and mapping programs such as National Geographic Online, Mapquest, and university library map collections. Information to support civics and economics instruction is widely available on Web sites sponsored by local, state, national, and international governments, public and private foundations, and institutions of higher education. In fact, so much information is available on the Web that authors are writing books and articles to help us cope with information glut and data smog (e.g., Shenk, 1998).

The storehouse of information available on the Web makes information accessible to students and teachers in ways heretofore unimagined. The multimedia nature of the Web facilitates rapid access to and clear display of information in a variety of media, ranging from text to movies to music to speeches. The multiplicity of information from different media, sources, and authors facilitates students' access to multiple perspectives, a key goal of social studies education. In its digital form, information can be accessed and manipulated via electronic search tools that not

only help students locate desired information but also help them examine patterns and discover new connections (Bass & Rosenzweig, 1991). And, information archives often provide tools, including email, bulletin boards, and forums, that facilitate the development of social networks in which students and teachers can correspond and collaborate with one another and with individuals who have expertise with a particular collection of information (Lee, 2002). These features of information archives enable students to become “the novice in the archive,” engaging in active exploration, interpretation, and communication in ways that have previously been reserved for expert learners (Bass & Rosenzweig, 1991).

Just as mere access to tools does not guarantee that students will engage in more meaningful social studies activities or gain richer understandings, mere access to information does not ensure that students will benefit from the potential experiences available in information archives. As most readers of this chapter realize, many Web sites are written above the reading level that has been attained by students with mild disabilities and other learning challenges (Debashis, 1995). Screen-reading programs can offer aural presentation of text, but, as discussed above, listening to information does not assist all learners in making better sense of it. Thus, teachers must prescreen Web sites for their readability before assigning them to students and/or build in the time and support necessary to help students understand what they are reading.

Likewise, it would be naïve to assume that information presented in pictures, movies, and music would, by virtue of its non-print form, be more accessible to students with disabilities. For example, when analyzing photographs and other historical images, students often lack knowledge of the past and of the technologies used to create these images (which can affect the way a photograph or picture appears). Furthermore, students’ interpretations are filtered through their present-day lives and experiences. To draw the full benefits from these resources,

therefore, students will need explicit guidance and scaffolding in analyzing and drawing conclusions from documents, information, and other materials available on the Web (Saye & Brush, 2002). To that end, we have developed guide sheets with a series of questions that we ask students to discuss, in groups and as a class, to facilitate their understanding of historical documents and images (Okolo & Ferretti, 1996b). Hicks (2003) describes a series of questions that students can adopt to guide their analysis and interpretation of information.

It is beyond the scope of this chapter to provide a comprehensive list of information archives that can be used in social studies classes; however, Table 1 offers a partial list and description of some popular social studies information archives.

### *Technology-Supported Projects*

To this point, we have discussed technology-based applications, including tools, supported text, and information archives, that have rich potential to improve social studies instruction for learners with mild disabilities and their normally achieving peers. Although the design and the features of these applications offers much promise, the way in which they are used will determine their impact on students' learning and motivation. In this section, we will extend the discussion to consider the types of *projects*, or goal-based activities that technology can support.

Project- or problem-based learning is not a new idea (e.g., Dewey, 1916), but structuring learning around the production of a specific product or the solution of a specific problem is especially relevant to social studies instruction. Although typical social studies instruction focuses on preparing for tests and other school-based tasks (e.g., Schumaker et al., 2002), the ultimate goal of social studies is citizenship preparation. Engagement in more authentic problem-oriented activities, in which students are working collaboratively to investigate and produce

solutions, is important preparation for the types of responsibilities and leadership we hope to bestow upon future generations (Brown, Bransford, & Cocking, 1999).

Okolo, Ferretti, and MacArthur (Okolo et al., 2002) have investigated an approach to history instruction, Strategy Supported Project-Based Learning (SSPBL), that combines project-based learning, cognitive strategy instruction, lessons in historical analysis and interpretation, and technology tools to support historical understanding. Using this approach, instruction is designed to be optimally accessible to students with mild disabilities. Units are organized into big ideas, students view video anchors to examine key ideas, classroom discussion is used to monitor, support, and extend students' understanding, and students complete inquiry projects about specific historical topics in heterogeneous cooperative groups. This research has been implemented in fifth- and sixth-grade urban classrooms serving students with and without disabilities. Results include the findings that students in SSPBL classrooms demonstrate increased knowledge and historical understanding and improved attitudes and self-efficacy (Ferretti & Okolo, 1996; Ferretti, MacArthur, & Okolo, 2001; MacArthur et al, 2002; Okolo & Ferretti, 1996a, 1996b, 2000).

Glaser, Rieth, Kinzer, Colburn, and Peter (1999) employed multimedia-anchored instruction in history units investigating issues and problems related to money, power, and human relationships in the 1930s and during World War II. Eighth-grade students with LD and their nondisabled peers in an integrated social studies classroom viewed video anchors, *To Kill a Mockingbird* or *Playing for Time*, and then engaged in a series of activities in which they retold and segmented the anchor, analyzed major characters, and researched issues related to the anchors. Compared to a baseline condition, the anchored-instruction condition elicited higher



rates of active involvement, increased the frequency of higher-level questioning, and stimulated more instances of higher-level reasoning about social problems.

The Web offers a plethora of opportunities for students to engage in collaborative projects that are oriented toward social studies goals including the investigation of history, the study of places and cultures, participation in civic and political activities, and social activism. For example, students can become members of a virtual expedition by joining an actual team of experts as they excavate Mayan ruins or explore Central America in a sea kayak. Most virtual expeditions extend over weeks or months, and offer educators a Web site that houses information about the expedition; pages for teachers (including lesson plans) and student activities; collections of relevant images, audio, and text; updates about expedition progress; and opportunities for students to interact with experts through email or other communication tools (Green, 1991).

*Virtual museums* are other rich sources of information and goal-directed activities to augment social studies instruction. Students and teachers can take *virtual field trips* to a variety of sites online that range in variety from a 1920 Utah farmhouse to Stonehenge. For example, the University of California at Los Angeles' (UCLA) Cultural Virtual Reality lab has recreated 3-D interactive reconstruction of the heart of imperial Rome that includes 22 historically accurate temples, courts, and monuments. Users can take a simulated journey through the ancient city by walking around, inside, and above it. The UCLA project is a highly sophisticated example of many online environments that support historical investigation. The Virtual Library Museums Pages, maintained by the International Community of Museums, list 1,031 virtual museum pages in the United States alone, <http://icom.museum/vlmp/usa.html>, ranging from sites such as the Smithsonian National Museum of American History to China the Beautiful. Although many of

these sites provide only information about the actual museum and its features, a growing number offer online exhibits and activities for school-age audiences.

Okolo and Englert (2001) are developing the Virtual History Museum, a web-based history learning environment designed to promote the historical understanding of all students and to offer cognitive supports and mediational tools that will enable full participation and success for students with mild disabilities. The Virtual History Museum (VHM) enables a teacher or student, who serves as a curator, to develop an exhibit about a topic, event, or artifact. Exhibits include activities that help viewers in the VHM investigate the exhibit and then communicate to others the results of their investigation. The VHM includes features to support students with disabilities, including text-to-speech capabilities and instruction in specific strategies that can aid historical understanding. Readers can become a guest of the VHM by visiting <http://www.vhm.msu.edu>, clicking on the Register button, and filling in the requested information.

Table 1 offers a selective list of online project sites, virtual expeditions, and virtual museums that support social studies instruction.

Insert Table 1 about

Research on the impact of many of the technology-supported projects on the participation, motivation, and learning of students with mild disabilities in social studies is meager. But, the studies cited above (e.g., Ferretti et al., 2001; Glaser et al., 1999; MacArthur et al., 2002; Okolo & Ferretti, 1996a, 1996b) show positive effects of technology on students' understanding of complex topics and motivation. Many of the issues discussed above are equally relevant to the implementation of technology-supported projects in the social studies. Thus, Web sites often contain material that is difficult to read and/or comprehend. Because many projects require

extended time and engagement, teachers must be able to make time and room for them in the curriculum. With increased expectations to cover content for high-stakes assessment, many educators find it difficult to integrate technology-supported projects into their instruction. Participants in our research studies have found it more feasible to use project-based learning when they have some flexibility in their schedules and when the projects address more than one curricular area (Okolo & Ferretti, 2001).

Because projects often entail group work, teachers must also consider how to prepare students and structure activities to ensure productive collaboration and equitable participation. For example, students may need instruction, explicit guidance, and monitoring in the use of social skills that facilitate group work (e.g., Nastasi & Clements, 1991). Furthermore, without clear guidance and teacher monitoring, small-group discussions often remain at a low cognitive level (e.g., Okolo & Ferretti, 1996b). Teachers can help engage groups in higher-level thinking and discussion by asking probing questions, pointing out inconsistencies, encouraging students consider alternatives, and helping students to view knowledge as tentative (Saye & Brush, 2002).

### *Simulations and Online Gaming*

Simulations have a long history of use in educational settings. Some of the first and best-known computer-based simulations for K-12 learners have involved social studies. For example, in Oregon Trail (MECC), a student takes the role of a mid-1800s emigrant crossing the Oregon Trail in a wagon train. The student must make multiple decisions about purchases, travel, interactions, and day-to-day living on the trail, with the goal of getting his or her family safely to Oregon Territory. Other simulations that address social studies content are described in Table 2.

Insert Table 2 about here

Simulations typically have some connection to realistic situations, placing students in roles that would otherwise be too advanced, dangerous, or logistically unrealistic. As in project-based learning, students are goal-directed and have the opportunity to make multiple decisions about how to solve problems. Students often find simulations motivating and eagerly interact with content (e.g., geography, economics) that they would otherwise find uninteresting or overwhelming (Teague & Teague, 1995). Simulations can be used as springboards for other activities, including data gathering, organizational, and research skills. Educators have also reported that they facilitate the development of cooperative skills and group problem solving (Carroll, Knight, & Hutchinson, 1995).

Technology-based games, particularly those available on the Web, place students in virtual worlds that have characteristics similar to simulations. In typical online games, users assume the role of a character who has to solve problems, such as locating magical items or battling demons, in pursuit of a larger goal, such as rescuing a princess or cleaning up a polluted island. In a new generation of online games, such as *The Sims*, individual characters also interact with other characters online to accomplish specific goals. For example, a *Sims* player customizes his/her *Sims*' personality and appearance and then moves into a neighborhood, where s/he makes friends and advances through personal and professional activities that simulate everyday life and career. Users pursue goals such as friendship, professional advancement, and personal satisfaction. Jayakanthan (2002) contended that the computer gaming industry has become bigger than the music and movie industries, noting that, "the influence of computer games over youth today is akin to that of the cultural influence of music, political movements, and even religion on youth culture of the past" (p. 98).

The virtual environments of video and online games have been deservedly criticized for the degree to which they promote violence and aggression and perpetuate gender-based stereotypes (e.g., Healy, 1998; Zirkel, 2003). However, divorced from the content of typical videogames, the game design principles employed in these interactive environment offer potential educational benefits. First, learners are placed in an active role in which they must apply their knowledge and skills as they engage in tasks and solve problems that will help them attain a higher-order goal. Second, because they are characters in a virtual world, they must act in ways that are consistent with that world, which include using the tools, ways of behaving and thinking, and discourse that are appropriate to that world. Third, virtual worlds can be structured to encourage cooperation among users, so that learners who work together to share information and accomplish specific tasks are more likely to succeed. Fourth, learners can exercise choice and control over their actions in these virtual environments. Fifth, anyone who has watched a young videogame aficionado knows that children can acquire a huge store of knowledge through extended interactions with these games and the peer communities that support them (e.g., Gee, 2003; Prensky, 2000).

Language educators have championed the value of online experiences in second-language acquisition. For example, Garcia-Carbonell, Rising, Montero, and Watts (2001) noted that goal-directed virtual environments facilitate important affective aspects of language acquisition, including immersion in an authentic environment of language use, lowered anxiety, and increased motivation and enjoyment.

The Education Arcade, [www.educationarcade.org](http://www.educationarcade.org), is a consortium of international game designers, publishers, scholars, educators, and policymakers who are committed to developing online games that teach. One of their prototype games is Revolution, a multiplayer, online, role-

playing game situated in 1773 Williamsburg, Virginia. Players choose a role to play from predefined characters and interact with other players in a series of historical circumstances that culminate in the outbreak of the American Revolutionary War.

Okolo and Englert (2003) are developing an online history game entitled Living History. The setting for this game is Philadelphia's Independence Hall and other significant sites around Philadelphia at the time of the American Revolutionary War. Students will acquire knowledge about this pivotal time in American history by exploring the virtual environment and engaging in a series of challenges in which they must obtain specific information and demonstrate their knowledge in virtual activities that are consistent with the times, such as writing a letter home to one's family about the fervor around separation, or polling characters in the local tavern to determine how many of them would be willing to go to war with Britain. Students will also interact with other characters in the Living History environment to accomplish specific group goals, such as preparing for and holding a debate before Congress about separation. Guides, or historical characters with special knowledge and expertise, will be available in the virtual environment to scaffold historical interactions and to check and challenge students' developing understanding of this period of history.

Despite the promise of simulations and online gaming to promote learning and motivation, research about their use in K-12 education is scant. Poorly designed simulations and games may have a negative impact; yet, there has been very little investigation of how games can be optimally designed to stimulate the cognitive processes of young learners (Gredler, 1996). Simulations and games may present an oversimplified sense of reality, given that the virtual world can rarely replicate the consequences associated with real-life decisions (Teague & Teague, 1995). Furthermore, even the most thoughtfully designed simulations and online games

run the risk of reifying cultural stereotypes, given that students may not have the opportunity to experience what issues and events are like from all perspectives (Carroll et al., 1995). Bigelow (1995) described the critical role of debriefing, a process in which teachers help students to reflect upon who created a simulation or online game and for what purpose to consider the groups who were not fully represented or included in the experience, and to question what their perspectives and experiences might have been.

### *Conclusions*

Despite the intellectually demanding and sophisticated cognitive processes involved in learning and understanding topics in the social studies, educators have offered clear and compelling demonstrations of effective and motivating ways to teach social studies content to diverse learners (e.g., Alleman & Brophy, 2003; Lee, 2002; Lehrer et al., 1998; Levstik & Barton, 1997; Okolo & Ferretti, 1998). Technology can play an important role in providing rich and accessible social studies instruction. These include (a) data analysis, presentation and communication tools; (b) supported text; (c) information archives; (d) technology-supported projects; and (e) simulations and virtual worlds. All offer additional avenues to help learners develop a deeper understanding of and interest in history.

Very few of the approaches and applications discussed in this chapter are “out of the box” methods that teachers can implement with minimal time and preparation. Rather, most of the approaches described above make substantial demands on teachers’ time. Time is a precious commodity in the classroom and in teachers’ lives, and voices from the reform and professional development literatures have reminded us that teachers must have protected time within school day in which they can engage in professional development and collaborate in the planning and development of instructional activities and materials (e.g., Hawley & Valli, 1999). Furthermore,

given the span of disciplines covered in the social studies, effective teaching demands deep content knowledge. Few elementary and special educators, in particular, are likely to have the depth of knowledge required to fully evaluate the quality of information available on the Web and in other sources. Nor do most have the breadth of knowledge required to design instructional activities that can offer a multiplicity of nuanced perspectives on social and historical topics. It is unrealistic to think that teacher education programs can provide novice teachers with sufficient expertise in the array of disciplines and complexity of topics that comprise our schools' social studies curricula. Like all good educators, effective social studies teachers must be lifelong learners who continue to investigate issues in the social sciences, connect these issues with their own life experiences and those of their students, and develop an extensive repertoire of pedagogical content knowledge (e.g., Okolo & Ferretti, 1998). Once again, ongoing professional development plays a key role in supporting these outcomes for educators. Models such as lesson study (Stigler & Hiebert, 1999) in which teachers collaborate in the development and analysis of lessons about key topics, offer powerful models for professional development in the social studies. Online communities, such as Tapped In (<http://ti2.sri.com/tappedin>), offer another avenue for sharing ideas and developing expertise.

Although the research base about the use of technology to improve social studies education for learners with disabilities is expanding, many questions remain unanswered. Because textbooks are likely to remain a staple of social studies instruction for years to come, additional research is needed about ways to construct text that is interesting and comprehensible for a variety of students (e.g., Beck, McKeown, & Worthy, 1995). Similarly, the field would benefit from further investigations of ways to effectively and feasibly adapt text to meet the needs of diverse learners (e.g., Edyburn, 2002, 2003b).



The increasing availability and affordability of screen-reading and text-to-speech software will render print-only versions of text obsolete. But, as discussed above, more research is needed to determine the conditions under which students can learn best from audio versions of text and ways to best supplement audio and print text with resources that enhance learners' comprehension and motivation. This is especially true in the social studies, in which students are working with text that often contains unfamiliar and complex vocabulary and content. The research about cognitive strategy instruction is replete with approaches for improving students' literacy, but only a small segment of this literature addresses the social studies (e.g., Klingner, Vaughn, & Schumm, 1998; Mastropieri, Scruggs, & Whedon, 1997; Mastropieri, Scruggs, Spencer, & Fontana, 2003). If students are to engage in authentic social and historical inquiry, then they need to learn a variety of strategies that include probing an author's intentions and underlying motivations, investigating bias in evidence, and synthesizing multiple perspectives (e.g., Ferretti & Okolo, 1996).

To engage in authentic disciplinary learning, students of the social studies need to interact with a variety of primary- and secondary-sources, ranging from maps and graphs to songs and diaries. The Web offers a rich repository of such documents that are freely available to all. The burgeoning array of electronic information is a boon to social studies instruction, but also presents new challenges to students, who must now learn to search for, analyze, and judge the credibility of a variety of online texts that include print, images, movies, and music. Yet, research about strategies that students can use to become more digitally literate is in its infancy.

Another area that is ripe for further investigation is the role that immersive, interactive environments can play in bringing the social sciences to life for students. Despite educators' enthusiasm about their potential contributions to student learning and motivation, poorly

designed simulations and games may have negative effects. We need to better understand the principles of game design that facilitate learning, while also considering our responsibilities as educators to construct learning environments that will reinforce pro-social and ethical behaviors (Gredler, 1996). Educators also crave research-based ideas about how to effectively integrate games and simulations into more traditional instructional practices. The lesson plans and communities of practice that have sprung up around simulations such as Oregon Trail and Carmen Sandiego offer good examples of the types of support that facilitates the use of these applications in the classroom.

In closing, technology offers rich opportunities for improving social studies instruction for all learners, but it also brings new challenges to special and general educators who teach these subjects. Social studies and special educators, and the students they teach, will benefit from future evolutions in technology, the continued growth of Web-based resources, and increased knowledge of how to build powerful technology-based learning environments.

Table 1  
Information Archives and Online Projects

Name	Description	URL
National Archives and Records Administration	A collection that documents the rights of American citizens, the actions of federal officials, and the national experience. Includes documents, posters, records, photographs and helpful background information about them.	
Library of Congress, American Memory Collection	A gateway to primary-source materials related to the history and culture of the United States. Includes activities and lesson plans to accompany the site's resources.	memory.loc.gov
History Matters	Designed for high school and college history teachers, the site has annotated hundreds of history Web sites and includes links to lesson plans, activities, primary documents, and guides for analyzing historical evidence.	www.historymatters.gmu.edu
History Wired	An online tour of the Smithsonian American History Museum	Historywired.si.edu/index.html
Electronic Texts for the Study of American Culture	A collection of texts about American history and culture, available in hypertext format.	<a href="http://xroads.virginia.edu/~HYPER/hypertex.html">http://xroads.virginia.edu/~HYPER/hypertex.html</a>
Ancient Cultures	A collection of documents and images to support the study of ancient cultures, including the Near East, Greece, and Islam.	http://eawc.evansville.edu/
Holocaust Museum	Information about the United States Holocaust Museum and online exhibitions that extend its collections.	<a href="http://www.ushmm.org">www.ushmm.org</a>
Ellis Island	Includes a search function that accesses records of immigrants to Ellis Island and online exhibits about the immigrant experience.	www.ellisland.org
Social Studies Sources	Contains links to a broad array	www.indiana.edu/~socialst

	of social studies Web sites and other helpful educational resources for K-12 teachers.	
Yahooligans	Yahooligans offers an extensive directory of sites to support history instruction, including a World Factbook with country maps, flags, and more and a collection of sites about United States history	<a href="http://www.yahooligans.com/Around_the_World/Countries">www.yahooligans.com/Around_the_World/Countries</a>
Best of History Web Sites	A collection of links to K-12 history lesson plans, teacher guides, activities, games, and quizzes.	<a href="http://www.besthistorysites.net">www.besthistorysites.net</a>
The History Lab	A collection of history lessons that focus on teaching history through primary sources and that engage students in inquiry, reflection, interpretation and constructing hypotheses.	<a href="http://hlab.tielab.org">hlab.tielab.org</a>
Local History Archives	Students in participating schools read and collect historical documents, photograph and research historical sites, and contribute their findings to a shared database.	<a href="http://lhap.tielab.org">lhap.tielab.org</a>
Sallie Bingham Center for Women's History and Culture	Contains images and texts related to African-American women, Civil War women, and the Women's Liberation Movement.	<a href="http://scriptorium.lib.duke.edu/women/digital.html">scriptorium.lib.duke.edu/women/digital.html</a>
The Presidents	A collection of texts from all presidents through George W. Bush	<a href="http://www.ipl.org/div/potus">www.ipl.org/div/potus</a>
Ben's Guide to the U. S. Government for Kids	Offers learning tools for K-12 students, parents, and teachers about how the U. S. government works, the use of the primary source materials of GPO Access, and how to use GPO Access to engage in civic responsibilities.	<a href="http://bensguide.gpo.gov">bensguide.gpo.gov</a>
Kids Voting USA	Offers a series of activities and lesson plans to support Civics	<a href="http://www.kidsvotingusa.org">www.kidsvotingusa.org</a>

	education.	
Web de Anza Project	Provides students and scholars with primary-source documents and multimedia resources covering Juan Bautista de Anza's two overland expeditions from the Sonoran Desert to northern California, leading to the colonization of San Francisco in 1776. A good example of supported text on a Web site.	anza.uoregon.edu
Eye Witness History: Through the Eyes of Those Who Lived It	Samples of eyewitness accounts of historical events from the ancient world through the 20 <sup>th</sup> century.	www.eyewitnesstohistory.com/
Repositories of Primary Sources	A listing of over 4,700 Web sites describing holdings of manuscripts, archives, rare books, historical photographs, and other primary sources.	www.uidaho.edu/special-collections/Other.Repositories.html
Public Broadcasting System	A collection of resources to accompany PBS history programming.	www.pbs.org/history
The History Channel	A collection of resources to accompany the History Channel programming.	www.thehistorychannel.com
ThinkQuest	Global network in which students work together in teams to research a topic in the social sciences and then publish their research as an educational Web site for peers and classrooms around the world.	<a href="http://www.thinkquest.org">www.thinkquest.org</a>
Newspapers Online	A collection of state, national, and world newspapers	www.newspapers.com
On This Day	A listing of historical events and other items of interest that happened on a particular day.	www.on-this-day.com
DMarie Time Capsule	Users can type in a date from the 20 <sup>th</sup> century and view news, sports headlines, birthdays, songs, and a sampling of prices.	<a href="http://www.dmarie.com/asp/history.asp">www.dmarie.com/asp/history.asp</a>

Online maps	Two popular sites for locating places, determining distances, and obtaining driving distances are Mapquest and Rand MacNally.	<a href="http://www.mapquest.com">www.mapquest.com</a> <a href="http://www.randmcnally.com">www.randmcnally.com</a>
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Table 2  
Simulations and Other Software to Support Social Studies Instruction

Name	Description	Producer or Distributor
Amazon Trail African Trail Oregon Trail	Students journey on a learning mission in which they interact with historic and cultural figures while learning about geography, history, culture, and science.	Riverdeep, <a href="http://www.riverdeep.net">www.riverdeep.net</a>
The Carmen Sandiego Series (Where in the World, Where in the US, Where in Time)	Carmen Sandiego and her gang of thieves have stolen a treasure. The player, in the role of a detective, must make use of clues and reference materials to track down the criminal.	Riverdeep, <a href="http://www.riverdeep.net">www.riverdeep.net</a>
Sim City	Players manipulate a number of different factors in the development of a community.	EA Games, <a href="http://simcity.ea.com">simcity.ea.com</a>
The Decisions, Decisions Series	Consists of 15 separate titles that engage students in simulations and decision making about historical and social issues such as immigration and prejudice.	Tom Snyder Productions, <a href="http://www.tomsnyder.com">www.tomsnyder.com</a>
Geography Search	Students learn geography skills and history by participating in a simulated voyage to the new world.	Tom Snyder Productions, <a href="http://www.tomsnyder.com">www.tomsnyder.com</a>
How Would You Survive?	Interactive adventures from the Aztec, Egyptian, and Viking civilizations.	Tom Snyder Productions, <a href="http://www.tomsnyder.com">www.tomsnyder.com</a>
Inspirer Geography Series	Teams of students travel throughout an area of the world in search of resources, commodities, and characteristics of states or countries while learning geography and problem solving skills.	Tom Snyder Productions, <a href="http://www.tomsnyder.com">www.tomsnyder.com</a>
The Graph Club, Graph Master	Software tool for creating, exploring, interpreting, and printing graphs	Tom Snyder Productions, <a href="http://www.tomsnyder.com">www.tomsnyder.com</a>
Timeliner	Software for creating, illustrating, and printing timelines.	Tom Snyder Productions, <a href="http://www.tomsnyder.com">www.tomsnyder.com</a>
Neighborhood Map Machine, Mapmaker's Tool Kit, Where are We, Mapping the World by Heart	Each of these titles supports geography instruction by providing tools for creating and a variety of maps.	Tom Snyder Productions, <a href="http://www.tomsnyder.com">www.tomsnyder.com</a>
Jean Fritz History Series	Four CD-Rom books that introduce students to key historical figures and events.	Tom Snyder Productions, <a href="http://www.tomsnyder.com">www.tomsnyder.com</a>





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